

EXHIBIT 1

Hawley's
Condensed Chemical
Dictionary

ELEVENTH EDITION

Revised by

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and
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um phosphotungstate

nic acid, ammonium
um salt).

c crystals. Mp 108C,
n water, alcohol, and

dex.

monium meta-

ammonium tung-

See zirconium ammo-

ite.
H. Available in
3 (24C). Stable up to
poses in dilute acids,

pellents for paper and
er in latex emulsion
wax to aid in resistance
n fabrication of glass

ride. See mercury,

series of quaternary
atives in which the sub-
benzyl, stearyl, lauryl.
Some items are similar.
yridinium salts. These
series are alkylamine

ents, emulsifiers, some
ngicides, disinfectants,

high analysis ammo-
ng fertilizers.

egg laid by reptiles and
yolk and a hard outer
o from the dry environ-
named for the ammonium
mabryo.

oamylbarbituric acid).

line powder; odorless
56-161C, solutions are

acid to litmus. Very slightly soluble in water,
soluble in alcohol.

Grade: USP.

Hazard: May be habit forming drug of abuse.
Use: Medicine also as sodium salt (hypnotic).

amiodiquine hydrochloride.

$C_{20}H_{22}ON_3Cl \cdot 2HCl \cdot 2HOH$.

Properties: Yellow, odorless, bitter, crystalline
solid. Mp 150-160C (decomposes), soluble in water,
sparingly soluble in alcohol, very slightly
soluble in benzene, chloroform, and ether; pH
(1% solution) 4.0-4.8.

Grade: NF.

Use: Medicine (antimalarial).

amorphous. Noncrystalline, having no molecular
lattice structure which is characteristic of the
solid state. All liquids are amorphous, some materials
that are apparently solid, such as glasses,
or semisolid, such as some high polymers, rubber,
and sulfur allotropes, also lack a definite
crystal structure and a well-defined melting
point. They are considered high-viscosity liquids.
The cellulose molecule contains amorphous as
well as crystalline areas. Carbon derived by thermal
decomposition or partial combustion of coal,
petroleum, and wood is amorphous (coke, carbon
black, charcoal), though other forms (diamond,
graphite) are crystalline. Amorphous metallic al-
loys for use as transformer coils are made by
extremely rapid cooling of the molten mixture.
They are composed of iron, nickel, phosphorus,
and boron.
See also liquid, liquid crystal, glass, metallic.

asbestite. A type of asbestos.
See asbestos.

AMP. (1) Abbreviation for 2-amino-2-methyl-1-
propanol. (2) Abbreviation for adenosine
monophosphate.
See adenylic acid.

AMP. Abbreviation for adenosine-5-monophos-
phoric acid.

See adenylic acid (muscle adenylic acid).

"Ampco."TM TM for a series of aluminum-iron-
copper alloys containing 6-15% aluminum, 1.5-
5.25% iron, balance copper. Resistant to fatigue,
corrosive, erosion, wear, and cavitation-pitting.
Use: For bushings, bearings, gears, slides, etc.

"Ampcoloy."TM TM for a series of industrial cop-
per alloys including low iron-aluminum bronzes,
nickel-aluminum bronzes, tin bronzes, manga-
nese bronzes, lead bronzes, beryllium-copper and
high-conductivity alloys.

"Ampco-Trode."TM TM for a series of aluminum-
bronze arc-welding electrodes and filler rod contain-
ing 9.0-15.0% aluminum, 1.0-5.0% iron balance
copper, for joining like or dissimilar metals
and overlaying surfaces resistant to wear, corro-
sion, erosion, and cavitation-pitting.

AMPD. Abbreviation for 2-amino-2-methyl-1,3-
propanediol.

amphetamine. (1-phenyl-2-aminopropane;
methylphenethylamine; "Benzedrine").
 $C_9H_{13}CH_2CH(NH_2)CH_3$.

Properties: Colorless, volatile liquid; characteristic
strong odor and slightly burning taste; bp 200-
203C (decomposes); flash p 80F (26.6C); soluble
in alcohol and ether; slightly soluble in water.
Grade: Dextro-, dextrolevo. Also available as
phosphate and sulfate.

Hazard: Flammable, moderate fire risk. Basis of
a group of hallucinogenic (habit-forming) drugs
which affect the central nervous system. Sale and
use restricted to physicians. Production limited
by law.

Use: Medicine.

amphibole. A type of asbestos.
See asbestos.

amphiphilic. A molecule having a water-soluble
polar head (hydrophilic) and a water-insoluble
organic "tail" (hydrophobic), e.g., octyl alcohol,
sodium stearate. Such molecules are necessary
for emulsion formation and for controlling the
structure of liquid crystals.

See also emulsion, liquid crystal.

ampholyte. A substance that can ionize to form
either anions or cations and thus may act as
either an acid or a base. An ampholytic detergent
is cationic in acid media and anionic in base
media. Water is an ampholyte.
See also amphoteric.

amphora catalyst. See catalyst, amphora.

amphoteric. Having the capacity of behaving ei-
ther as an acid or a base. Thus aluminum hydrox-
ide neutralizes acids with the formation of alumini-
um salts, $Al(OH)_3 + 3HCl \rightarrow AlCl_3 + 3HOH$,
and also dissolves in strongly basic solutions to
form aluminate $Al(OH)_3 + 3NaOH \rightarrow Na_3AlO_2$
+ 3HOH. Amino acids and proteins are amphoteric,
i.e., their molecules contain both an acid group (COOH)
and a basic group (NH₂). Thus, wool can absorb both acidic and basic dyes.

amphotericin B. A polyene antifungal antibiotic.
 $C_{47}H_{73}NO_{17}$.

in water (17%), wholly ether. Combustible. Irritant, strong eye and skin risk. Intermediate, source of monomers, gant.

molecule in which ether connected by dimethylene to a centrally locatedogen atoms of the ethers, is (electron donors). Such complexing or chelating species, silicon replaces the They were so named because they resemble a crown. etc.

iller, usually calcium sulfide mixture thereof used in

ptical.

sped container having a of a refractory material, nation and combustibles. d with a cover. A gooch at its base to permit filtrated after its inventor, an In the steel industry, a provided with a cavity metal.

(4-tert-butyl-2-chloro-imide; 4-t-butyl-2-ethyl phosphoramidate;

mp 291.71, mp 61C, in alcohol, benzene, and commercial product is a

and antihelminthic.

ratory crusher.

er of the lithosphere, mafic rocks less dense until below.

ch of chemistry devoted occurring at extremely and lower). It permits that are too unstable at normal temperature.

behavior of matter at C. The use of the lique-

fied gases, oxygen, nitrogen, and hydrogen at approximately -260C is standard industrial practice. Examples: Use of liquid nitrogen for quick-freezing of foods and of liquid oxygen in steel production. Some electronic devices and specialized instruments, such as the cryogenic gyro, operate at liquid helium temperature (approximately 4K). Many lasers and computer circuits require low temperature. Original research in this field was carried out by W. F. Giauque in the US and by Kamerlingh-Onnes in Holland. See also superconductivity.

cryolite. (Greenland spar; icestone).

Na_3AlF_6 . A natural fluoride of sodium and aluminum or made synthetically from fluorspar, sulfuric acid, hydrated alumina and sodium carbonate.

Properties: Colorless to white, sometimes red, brown, or black; luster vitreous to greasy; hardness 2.5; d 2.95-3.0. Refr index 1.338, mp 1000C, soluble in concentrated sulfuric acid and in fused aluminum and ferric salts.

Occurrence: Colorado, USSR; Greenland (only commercial source).

Derivation: Synthetic product is made by fusing NaF and aluminum fluoride.

Use: Electrolyte in the reduction of alumina to aluminum, ceramics, insecticide, binder for abrasives, electric insulation, explosives, polishes.

"Cryovac."™ for a light, shrink-film, transparent packaging material based on polyvinylidene chloride. Used especially for meats and other perishables.

cryptocyanine. (1,1'-diethyl-4,4'-carbocyanine iodide). $\text{C}_{22}\text{H}_{26}\text{N}_2\text{I}$.

Properties: Solid, mp 250.5C.

Use: Organic dye soluble used as a chemical shutter in laser operation.

See also cyanine dye.

cryptostegia rubber. Rubber from leaves of *Cryptostegia grandiflora* and *C. madagascariensis*.

cryptoxanthin. (provitamin A; hydroxy- β -carotene). $\text{C}_{40}\text{H}_{56}\text{O}$. A carotenoid pigment with vitamin A activity.

Properties: Garnet-red prisms with metallic luster; mp 170C; soluble in chloroform, benzene, and pyridine; slightly soluble in alcohol and methanol.

Occurrence: In many plants, egg yolk, butter, blood serum. Can be made synthetically.

Use: Nutrition, medicine.

crystal. The normal form of the solid state of matter. Crystals have characteristic shapes and

cleavage planes due to the arrangement of their atoms, ions, or molecules, which comprise a definite pattern called a lattice. Crystals may be face-centered, body-centered, cubic, ortho-rhombic, monoclinic, prismatic, etc. They have flat surfaces, sharp edges, and a definite angle between a given pair of surfaces. The form of a crystal is called its "habit." One of the most important features of a crystal is its optical properties, chief of which is its index of refraction, i.e., the extent to which a beam of light is deflected on passing through the crystal. Depending on the manner of light transmission, a crystal may be isotropic or anisotropic. Anisotropic crystals can polarize light (see also optical isomerism, optical rotation). Crystals also have electrical and magnetic properties now being used in computers and other electronic devices. Crystals are almost always imperfect and contain impurities (atoms of other elements). These are utilized in semiconductors. For methods of growing crystals, see nucleation.

Single crystals are used in masers, lasers, semiconductors, miniaturized components, computer memory systems, and as "whiskers." Many metals are now available in large, single crystalline form and such natural crystals as ruby, garnet, sapphire, etc., are used in these applications. See also crystallization, nucleation, liquid crystals, hole, vacancy.

crystalline rocks.

Igneous or metamorphic rocks.

crystal liquid. See liquid crystal.

crystallite. That portion of a crystal whose constituent atoms, ions, or molecules form a perfect lattice, without strains or other imperfections. Single crystals may be quite large, but crystallites are usually in the microscopic range.

See also crystal.

crystallization. The phenomenon of crystalline formation by nucleation and accretion. The freezing of water into ice is one of the commonest examples of crystallization in nature. Industrially, it is used as a means of purifying materials by evaporation and solidification. The sugar of commerce is made in this way. Similarly, salt cake is derived from crystallization of natural brines (Searles Lake). Nucleated crystallization is also used to form polycrystalline ceramic structures.

See also crystal.

crystals of Venus. See copper acetate.

crystallography. The study of the crystal formation of solids, including x-ray determination of

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